Occupational HAZARDS & SAFETY

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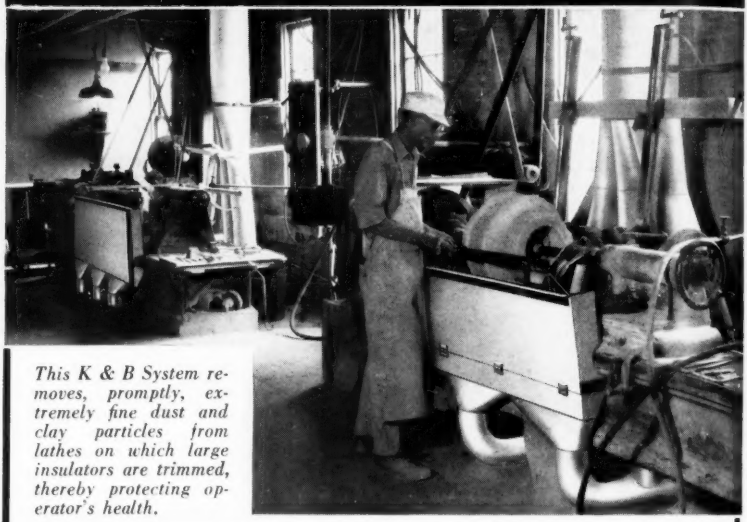

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DOUBLE WILLSON
PRODUCTS INCORPORATED
READING, PA. U.S.A.
GOGGLES
RESPIRATORS
HELMETS

Useful Free Literature

The publications briefly described in this service department are prepared by manufacturers' technical experts. The data they contain on equipment, supplies and prevention methods applies to varied phases of occupational hazard problems.

142—DUST COLLECTOR

New illustrated circular of the American Foundry Equipment Co. gives the mechanical features and construction of the American assembled type dust collector. Specifications of all models are listed.

143—COOLING FANS

Folder of the Robinson Ventilating Co. describing and illustrating line of ventilating fans for cooling men and products. Includes technical data and typical installations.

144—WASHROOM LAYOUTS

Attractive 12-page booklet of the Bradley Washfountain Co., giving ten representative washroom layouts together with helpful facts pertaining to fixture capacities and clearances.

145—HEAD AND EYE PROTECTION

48-page catalog of the Chicago Eye Shield Co. Illustrates and describes complete line of protectors for eyes, face and respiratory organs.

146—INDUSTRIAL VENTILATION

Folder of the Buffalo Forge Co. giving specifications of several types of industrial ventilating fans. Includes illustrations of typical installations.

147—INFECTION PROTECTION

Folder of the Sugar Beet Products Co. discussing importance of cleanliness in the prevention of dermatitis.

148—PROPER LIGHTING

Attractive 8-page folder of the Fostoria Pressed Steel Corp. listing, illustrating and describing various models of lighting units for localized lighting. Specifications included.

149—SAFETY MATS

Melflex Products Co. has issued a folder on a complete line of safety mats and safety treads.

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150—AIR HANDLING

Engineering data, illustrations and descriptive material on dust arrestors, filters and fans are included in a catalog of the Northern Blower Co.

151—SOAPS

Folder of the G. H. Packwood Mfg. Co. in the "Old Doc Pax" series. Includes interesting data on cleanliness and sanitation.

152—CONDUIT FITTINGS

Explosion-proof and dust-tight electrical fittings are described in a new catalog of the Pyle-National Co. Of particular interest to electricians and maintenance men.

153—FAN APPLICATIONS

Bulletin of Hartzell Propeller Fan Co. shows the use of fans for exhausting and cooling purposes in many industrial applications.

154—GOGGLE UNITS

M.S.A. bulletin on the new Speedframe goggle units. Illustrates and describes the use of the unit in various applications.

155—BUILDING MAINTENANCE

A 60-page handbook on building maintenance is announced by The Flexrock Co. This book contains pictures, mechanical drawings and other illustrations explanatory of details on materials and their application and maintenance.

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Book On Industrial Exhaust Systems

A NEW BOOK by John L. Alden, published by the Industrial Press, includes interesting and valuable data on the design, construction and purchase of industrial exhaust systems. The purpose of the book is to inform the engineer on the proper functioning of exhaust, hoods, separators, fans, etc. "Design of Industrial Exhaust Systems" is the title of this handbook.

No. 40 FACE SHIELD

THE SHIELD to handle almost every industrial need—

- Resistance Welding Operations
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Write For Complete Circular

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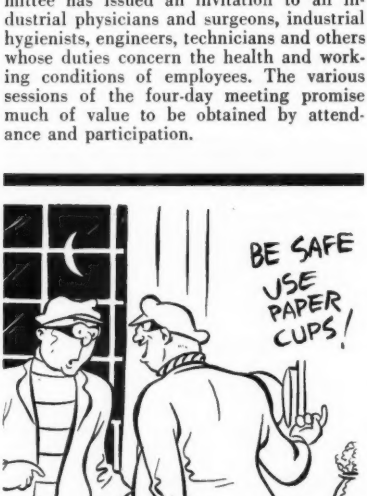
Industrial Physicians and Hygienists Meet

JUNE 5, 6, 7, and 8 are the dates for the 24th Annual Meeting of the American Association of Industrial Physicians and Surgeons, meeting with the American Conference on Occupational Diseases and Industrial Hygiene. The meetings will be held at the Hotel Statler, Cleveland, Ohio. An interesting program has been arranged with outstanding speakers scheduled. The Committee has issued an invitation to all industrial physicians and surgeons, industrial hygienists, engineers, technicians and others whose duties concern the health and working conditions of employees. The various sessions of the four-day meeting promise much of value to be obtained by attendance and participation.



"I always leave a reminder like dat. I feel it compensates for the wrong I'm doin'!"

Courtesy Health Officers News Digest

Eliminating Hot Weather Hazards

THIS issue of OCCUPATIONAL HAZARDS & SAFETY discusses primarily those factors which aid in promoting employee comfort and health during the hot summer months —ventilation, plenty of properly cooled drinking water, prevention of heat illness, and bathing facilities. Excessive heat stimulates fatigue. And uncomfortable, tired workers cannot perform their tasks in the most efficient and safest manner. Furthermore, they are more exposed to sickness and injury. For the benefits derived it is relatively simple and inexpensive for an employer to provide equipment and institute measures which will reduce the hazards of discomfort and illness resulting from hot, humid working atmospheres. The natural period of fatigue is accelerated when employees perspire excessively and are subject to high temperatures in addition to the heat from the operations on which they are working. If the air in the workroom is kept fresh and clear, circulated and changed at regular intervals, the comfort and efficiency of workmen will be improved.

In previous issues of OCCUPATIONAL HAZARDS & SAFETY, the hazards of heat sickness—exhaustion, fatigue and cramps —have been discussed at some length. Proper precautions should be taken in every plant to see that men who perspire a great deal not only drink sufficient water, but use proper amounts of salt with their drinking water to prevent heat sickness. The drinking cooler or fountain becomes increasingly important during hot weather.

Sufficient numbers of these should be provided at convenient locations. They should be kept clean and sanitary so as to invite the men to drink enough water for their comfort and health.

Management more and more is recognizing the importance of providing the opportunity for employees to "clean up" at the end of the work day. While cleanliness knows no seasons, hot weather increases the desire for cooling showers. It will pay every employer to check the bathing facilities in the plant and make certain that the workmen have enough and the right kind of showers for their use.

Now is the time to make a thorough check-up on your equipment for aiding employee comfort, health and safety during the hot months. Replace worn-out equipment; install those devices which will maintain production efficiency at a normal level. Your employees will appreciate such measures and your operating costs will show the monetary benefits.

Protectors In Standard Safety Code

This is the third in the series of recommended protectors as set forth in the revised copy of "The American Standard Code for the Protection of Head, Eyes and Respiratory Organs."

Group E

Processes where protection to the eyes from gases, fumes and liquids is required. Examples: handling of acids, caustics, corrosive chemicals, dipping, brush coating, etc.

Protectors

Eyecup goggles of flexibly connected lens containers shaped to conform to the configuration of the face; face masks and hoods are permissible styles. They need not comply with any strength tests.

Goggles—(a) for handling acids, caustics, etc.—Eyecups shall be of soft pliable rubber or equivalent non-inflammable material and shall be flexible enough to conform to the configuration of the face readily. A suitable headband or headpiece shall be provided, and it shall be impossible for splashing liquids to enter the eyes through the openings provided for ventilation. Where the presence of fumes would cause discomfort to the wearer if ventilating ducts were provided, goggles without ventilating openings shall be used. (b) For use in brush coating—eyecups of rigid, non-inflammable material that will not readily corrode, shaped to fit configuration of face, and provided with suitable headband to hold them in place. The design having solid eyecups, except for single ventilating opening near the lens, is preferable. If volume of fumes arising from work is great, the eyecups shall be padded so that they fit the face closely, or else respirators with goggles shall be worn.

Face Masks—Face masks shall be of metal, vulcanized rubber, fiber or equivalent material and shall have no openings in the front of the mask other than required for lenses. Masks shall be so shaped as to effectively protect the entire face.

Hoods—Hoods shall cover the head and neck completely and shall extend below the shoulders so as to effectively exclude gases. If a hood is supplied with air from external sources, the protector must meet the specific requirements for this type equipment.

16,000 Shoes For Safety

ACCIDENTS to feet and injured toes, formerly quite common are now a rarity in the Port Arthur Works of the Gulf Oil Corp. Why? According to the Good Gulf Foreman, 8000 pairs of safety shoes have been purchased by employees.

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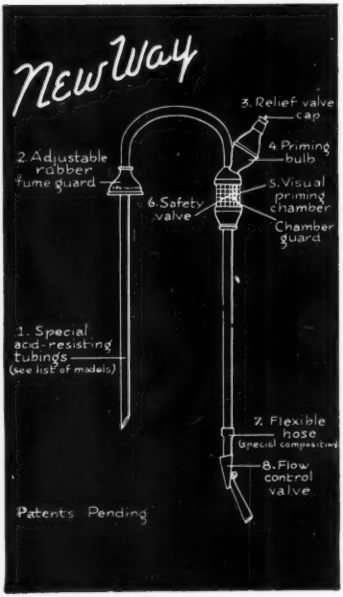

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OCCUPATIONAL Hazards AND Safety

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Front Cover: Modern lockers and washfountains in up-to-date industrial plant help promote cleanliness. Note fan overhead, Photo courtesy Bradley Washfountain Co.

Vol. I, No. 9

Copyright, 1939, by the INDUSTRIAL PUBLISHING CO. Published Monthly.
812 Huron Road, Cleveland, Ohio

Irving B. Hexter, President
L. P. Aurbach, Vice-President

E. J. McFadden, Editor
Alfred G. Raufer, Representative

Photo Courtesy Buffalo Forge Co.

KEEP THE WORKROOM COOL

By John L. Doty

CONTROLLED surveys and experience reveal that conditions under which employees work have a direct bearing on their output, health and attitude toward their work, employer, and company. Employers need no yardstick or elaborate charts to explain the obvious fact that a man who works in a hot, humid atmosphere, contaminated with odors, fumes, smoke and dust cannot perform his tasks in the most efficient manner. Stale, stagnant air tends to reduce the comfort and efficiency of the employee. And the comfort and abilities of workmen decrease as the atmosphere in which they work becomes more contaminated. It is only natural that workmen tire during the day. Fatigue increases with the length of time the employee performs his work. But this feeling of tiredness and discomfort could be reduced greatly with proper ventilation in the plant —fresh, clean, constantly changed air. Keeping the air fresh helps in keeping the men fresh and comfortable.

Why Workroom Ventilation

Ventilation may be defined simply as the process of supplying, removing, or moving air from one place to another by natural or mechanical means. The purposes of ventilation in workrooms include:

1. Comfort and health of workmen.
2. Aid in production processes.
3. Aid in the functioning of machinery.

The use of ventilation as an aid in production might well be found in

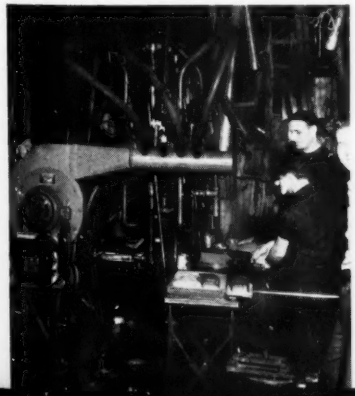
a paper mill where forced air is utilized to hasten the drying of wet stock. An example of ventilation as an aid in the operation of machinery may be found in salt plants where grainors are subjected to a continuous flow of cool, fresh air. While it is true that these two purposes are of practical importance in many industries, we are concerned here only with the first purpose—protecting and increasing the health and comfort of workers. Adequate ventilation for this reason pays dollars and cents dividends in many ways.

Of course, workers can perform their duties under a wide variety of atmospheric conditions. But there is in reality only a narrow range of temperature and humidity in which workers are the most comfortable and can do their work most efficiently. Management need not be so much concerned with just what these limits are or should be—although such ranges have been studied and serve as valuable data in the engineering problems of providing ventilation and air conditioning. The employer should recognize the fact that it is wise and profitable to keep the air in the plant fresh and clean at all times. This is especially true where the atmosphere may contain noxious or toxic dusts and fumes. It is too easy to take "air" for granted. It is present at all times. But in industrial operations it is constantly being contaminated with all kinds of annoying and harmful elements. Therefore, unless the air is activated and changed constantly, employees, products, and machinery suffer.

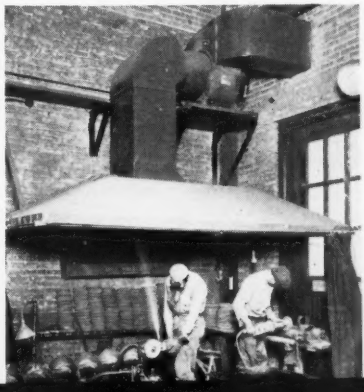
Methods of Ventilating Workrooms

Ventilation may be produced in two ways—natural and forced, or mechanical. Natural ventilation, as the term applies, depends upon the "natural" movement of the air through open doors, windows, shafts, roof ventilators, etc. However, in the majority of plants this method of ventilation will not handle all the problems. Seasonal weather differences also reduce the value of natural ventilation. In the cold months windows and doors must be kept closed, and in the summer months these openings are insufficient to move and change the air adequately. Another disadvantage of depending solely upon natural ventilation is the fact that this method does not cause a complete change of

Showing blower used in glass plant to cool men and molds. This is a portable unit. *Photo courtesy Robinson Ventilating Co.*



Exhaust ventilation in grinding room. Fan used to draw dust particles through ducts to outside. *Photo courtesy Ilg Electric Ventilating Co.*



air. It is generally recognized that the air in the workroom should be changed three or four times an hour. Natural ventilation is not sufficient in itself to attain this goal.

Warm air, being lighter than the surrounding air, naturally rises. Advantage can be taken of this phenomenom to create a suction or heavy draft by placing ventilators in the roof of the workroom. The warm air will rise through these openings and be replaced by the fresher, cooler air coming into the room through open doors, windows, etc. All of us are familiar with these roof ventilators. They are of various designs, some being stationary with openings on the sides, while others take advantage of the prevailing winds and rotate to discharge the air in the direction in which the wind is blowing. If these ventilators are properly designed, a suction is created within the workroom and the air is discharged by the natural action of the ventilator.

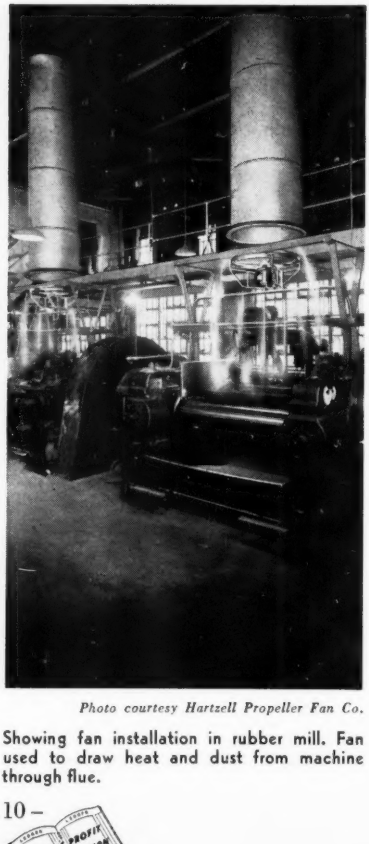


Photo courtesy Hartzell Propeller Fan Co.

Showing fan installation in rubber mill. Fan used to draw heat and dust from machine through flue.

Forced or Mechanical Ventilation

Mechanical ventilation of the proper capacity and installation affects a complete change in the workroom atmosphere at regular intervals, depending upon the atmospheric conditions encountered. Accurately designed and installed fans provide one of the most effective means of workroom ventilation for employee comfort, health and efficiency. The most commonly used type of mechanical ventilation is the exhaust principle—drawing the air from the room by means of fans. Fans are located in side walls, set in frames in upper parts of windows, or in transoms over doors. Also occasionally they are mounted with vertical shafts to discharge through flues. General exhaust ventilation of this nature is inexpensive in original installation and easy and economical to maintain.

In general exhaust ventilation the exhausting fans should be placed so that the directional flow of the air being discharged is away from workers and operations. If the main inlet for the fresh air is through open doors or windows on one end or one side of the room, the fans should be mounted on the opposite side to

[*Continued on page 28*]

Profits Rise—With Plenty of DRINKING WATER

By H. J. Porter

The desire for water increases during hot summer months. Plenty of cool, pure water and adequate and convenient sources increase employee comfort and efficiency. Data courtesy General Electric Co. and Frigidaire.

WATER is a simple but fundamental need of every worker. Without an adequate and healthful supply fatigue increases, health is jeopardized and work suffers. Workmen need water the year around, but this desire increases in the hot months when the body is subjected to higher temperatures and loses more moisture through perspiration. Sixty to seventy per cent of a person's weight is water. Thus, a man weighing 150 pounds is made up of 100 pounds of water and 50 pounds of solids. On the average, we lose about 110 ounces of water per day—equal to 18⅓ six-ounce glasses. The bodily water loss is through the kidneys, through breathing, and perspiration. The total daily body water loss is about 7% of the body's water supply. The vital importance of keeping the water content of the body at the normal level is emphasized in the fact that it would be fatal to lose 10% of the body water supply.

Regular, well-balanced meals will replace approximately 70 ounces, or 11⅔ six-ounce glasses of the water lost. This means that the deficit of 40 ounces, or 6⅔ six-ounce glasses must be consumed daily to keep the body supply normal and permit the

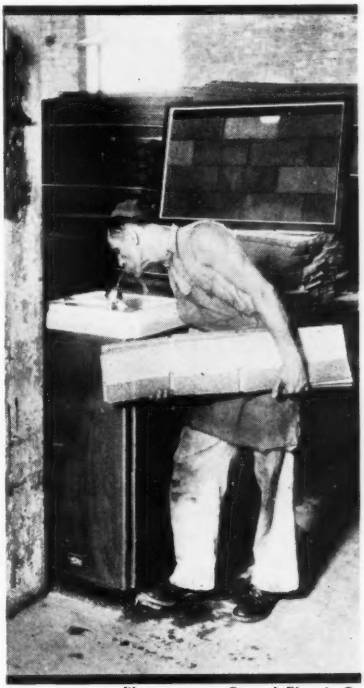


Photo courtesy General Electric Co.

"The Pause That Refreshes" might well be the title of this picture. Conveniently located coolers give workers chance to drink plenty of water.

body organs to function naturally and properly.

This brief and simple discussion of the part water plays in the normal functioning of the body emphasizes the need in industry for adequate, sanitary water facilities. Many employers recognize that a good drinking water supply for their employees is a requisite of good management. In spite of this recognition, however, and of the rewards (many of them monetary) some employers have failed to put into operation this fundamental principle of good and profitable operating management. As a result, this type of employer is failing to reap the rewards of employee comfort and health, increased production efficiency, and employee satisfaction and appreciation. Of all the many things which management has done to improve working conditions probably none has been more universally appreciated than the installation of modern drinking water facilities—sanitary fountains, water coolers, sanitary paper cups—all of which aid in providing workmen with clean, cool drinking water in a plentiful supply.

Factors Determining Proper Water Facilities

In checking over your present drinking water facilities, or in making a survey for the installation of up-to-date equipment, give careful consideration to the following basic factors:

1. Sufficient number of sources for the number of workers to be served.
2. Purity and cleanliness of supply.
3. Convenience and location of sources.
4. Maintenance of proper temperature.

One of the most common mistakes in the installation of drinking facilities is the failure to provide a sufficient number of sources. "One fountain or cooler is enough" seems to be the guiding phrase for many employ-

[*Continued on page 30*]

Showing modern water cooler with two outlets permitting faster handling of "drinkers" with savings in space and operating costs. Used to advantage where workmen are concentrated.
Photo courtesy Frigidaire

MODERN WASHROOMS

Pay for themselves

By Carl L. Tigle

Too few employers realize the cost of maintaining unsanitary washrooms, and are unaware of the fact that modern washrooms soon pay their own way.

INNUMERABLE records of all types and sizes of industrial establishments reveal an interesting, albeit, logical fact—plants which maintain adequate and proper sanitary facilities have the lowest absenteeism records, the lowest compensation costs for occupational diseases, the lowest insurance rates (in states where private carriers operate), and the most favorable employee relations. Certainly this fact is of primary importance to every plant. And when the cost of installing and maintaining proper sanitary equipment is compared with the tangible and intangible costs of none at all, or improper facilities at best, it is readily admitted that no plant, regardless of size, can afford to tolerate improper washroom facilities.

It is true that today a great many states require employers to provide so many toilets, showers, washbowls, etc., according to the number of employees. So what? Recently an inspector revealed a situation which is not at all uncommon and minimizes the practicable value of these state requirements. The plant in question normally employs about 175 men. The code of the state in which the plant operated required the maintenance of one shower for every thirty employees. The inspector pointed out that the employer adhered to the letter (if not the spirit) of the law by having eight shower outlets. But closer investigation revealed that three of the outlet pipes had no spray heads, two were so badly rusted and stopped up that water barely trickled through them, and one allowed only cold water to pass through the head. Net shower facilities—three for 175 men. Needless to say, the majority of the workmen in that plant went home in the evening carrying the dirt and dust of the plant with them.

This example is not to be taken as opposition to state sanitation requirements. They are necessary. But at best they are only minimum, setting forth suggestions for guidance. State officials are among the first to admit the inability of these require-

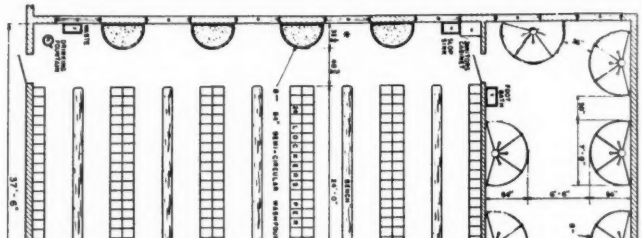


Photo courtesy Bradley Washfountain Co.

Suggested layout for modern washroom facilities for 240 employees. Adequate equipment to expedite changing of clothes and washing. Progressive plants recognize the value of such up-to-date locker and shower facilities.

ments to obtain the desired results in industry. And many employers state frankly that the state requirements do not go far enough—that mere adherence to the law is not sufficient for proper washroom set-ups. Wise employers, therefore, while referring to these requirements, do not depend upon them. They provide workers with plenty of soap and hot water because experience and common sense prove that a clean worker is a healthy worker, escaping dermatitis and other industrial diseases that arise from dust and dirt; that employees do appreciate the opportunity to clean-up and change clothes before going home at night; and that employee goodwill is founded on such fundamentals as sanitary washrooms.

Promoting Employee Cleanliness

Let us listen in on an insurance inspector's report to the operating vice-president of the plant the inspector has just surveyed.

"Well, Mr. Vice-President, I've just completed my survey of your present washroom facilities and am ready to make my report which shows not only what your company should do to bring your facilities up to the state requirements, but to provide enough and the right kind of equipment for better employee health and efficiency."

"That's fine, Mr. Inspector, but I haven't an awfully lot of time today. After all, I guess the report can wait a few more days, can't it?" That reply may sound shop-worn. If it does, it is only because it is typical and has been used many times in just such circumstances.

"Yes, of course, it can, Mr. Vice-President, but to be perfectly frank with you, it is costing your company

[*Continued on page 32*]

The Insurance Engineer Evaluates INDUSTRIAL HYGIENE PROBLEMS

By WARREN A. COOK

Division of Industrial Hygiene & Engineering Research
Zurich General Accident & Liability Insurance Co., Ltd.

TODAY, the materials which cause injury to health are, for the most part, generally known. Today, control measures for the great majority of exposures are readily available.

But it is only through evaluation of the severity of these hazards and application of these known control measures that occupational diseases may be effectively and economically controlled. This field of evaluation and application constitutes a valuable function of the insurance engineer.

A new industrial product involves the fixing of cylindrical lenses to metallic reflectors with litharge-glycerine cement. The group of girls conducting this operation merely remove a small quantity of the lead oxide powder from a one pound carton by means of a spatula and mix it with the glycerine on a glass plate. The girls are neat and clean; ample washing facilities are provided; lunches are not eaten in the workroom. The manufacturer knows that litharge will cause lead poisoning but believes he has taken adequate precautions—particularly in view of the small amount of material being used.

The insurance engineer observes the operation. It appears entirely harmless to be sure, but what of the litharge dust in the air breathed by these girls? The manufacturer states quite truly that this dust is much heavier than air and settles rapidly—and he promptly dismisses all thought that this operation may present a serious exposure.

The records of the insurance company happen to include cases of lead poisoning from just such an exposure and, though the operation appears harmless, the insurance engineer brings to the picture these cases in arriving at his evaluation of the severity of the exposure.

The management is still of the opinion that conditions at his plant are satisfactory and those at the plant where the cases occurred must somehow have been less favorable. Analysis of the air for its lead content is made during normal working conditions. Only on seeing the high result of this analysis does the manufacturer accept the evaluation of the exposure as excessive.

It is not only in light opera that "things are seldom what they seem" but such a condition frequently occurs in occupational disease exposures and makes accurate evaluation difficult. Some of the more odoriferous of the solvents, for example, amyl acetate, are much less toxic than some of those with comparatively little odor, such as benzol. Visible dust clouds from a wood sanding operation may be less hazardous than an exposure to fine silica dust

of less than the visible concentration. Some conditions are, to be sure, obviously good and others as obviously bad. However, it is always good practice to obtain all assistance possible in arriving at a reliable and sure evaluation of the severity of the exposure.

Control Methods

Assume now that the exposure had been shown to be excessive. What to do about it?

Methods have been developed and are available for controlling all occupational disease exposures. The cost of some of these methods may cause them to be economically impractical and the economic factor should always be given its full weight. Information has been published on both the general and the specific aspects of control measures. A general discussion of dust control is given in the Report of the Engineering Committee of the National Silicosis Conference (Bulletin 21, Pt. 2, U. S. Division of Labor Standards, Washington, D.C.). This report includes discussion of plant design and renovation, general maintenance (housekeeping and general order), general ventilation and local exhaust, enclosed processes and wet methods, personal protective devices—their uses and limitations, sampling and examination of industrial dusts (sizes, composition and concentration), management's and employee's responsibility as to the care and use of protective equipment, and dust concentrations in certain occupational exposures.

Similar information is available on control measures for other occupational diseases, much of this scattered widely through extensive literature and included in a number of texts.

Authentic information is also available through manufacturers of various types of equipment which may be applied to the solution of the industrial hygiene problems. Such information is of course available through state and federal bureaus of occupational diseases, consultants, and insurance engineers. But to a considerable extent, those manufacturers who must contend with occupational disease exposures know generally that a number of control measures are available and have more or less complete knowledge of these measures.

The point to be emphasized at this time is that it requires the proper application of these well known measures if individual exposures are to be controlled. All of the agencies mentioned in the foregoing paragraph are available to assist the manufacturer in the application of the proper measures. The insurance engineer occupies a strategic position as he knows what conditions are resulting in claims; he has access to various agencies which can bring expert services to bear on specific phases; he has the confidence of the concern; and he has a broad appreciation of the often involved nature of the problem.

In an operation where gravel and sand were being sifted from a refuse ceramic material, dust determinations had shown the exposure to be excessive. On the basis of this evaluation of the extent of the hazard, it became a question of which of several methods should be applied in its control.

While plans were being discussed and costs obtained, the first measure suggested by the insurance engineer

was that filter type respirators, approved by the U. S. Bureau of Mines for Type A dusts, be worn by the worker conducting this operation and others in the vicinity. An up-to-date list of the names and manufacturers of such respirators was given to the management together with a pamphlet on the use and care of respirators, published by the Preventive Engineering Committee of the Air Hygiene Foundation.

Attention was then given to additional exhaust ventilation and to further mechanization and enclosure of the operation. The engineer of the concern which manufactured and installed the ventilation equipment was called in and a combination of methods was developed. A hoist was provided for elevating and dumping the container directly into the screen hopper instead of shovelling it by hand and the exhaust hood was extended in such a manner as to appreciably reduce the amount of dust which escaped. The laborious hand shovelling with its attendant dust exposure was eliminated. Dust determinations demonstrated that the average exposure of the worker conducting the operation and that of other men adjacent to it were well within safe limits. Furthermore, the management pointed out that the change permitted the worker more time for other duties.

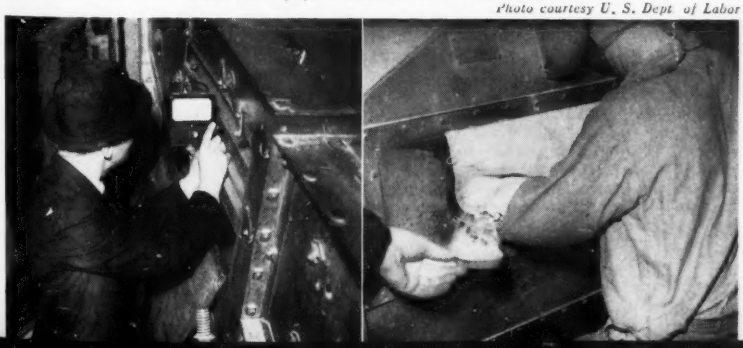
The provision of a sound, authoritative service by the engineering department of the insurance carrier in aiding management to control health hazards constitutes the type of assistance which is being recognized by the manufacturer as of material constructive value.

During the past twenty-five years, vast strides have been made in accident prevention. We have directed serious attention to occupational disease control for little more than half this period but much has already been accomplished. As more general information on occupational hazards is made available to the manufacturer, the functions to which the insurance engineer is to give increasing emphasis are the accurate evaluation of the severity of the exposure and assistance in the application of practical and economic control measures.

The cooperation of all parties concerned — management, employees, manufacturers of safety equipment, governmental agencies, insurance companies and independent research and educational organizations — is needed for accurate evaluation of the problem and proper application of control measures and preventive equipment. In this manner our common goal can be achieved

One of the important functions of the insurance engineer is to aid employers in studying methods and equipment to control dust and fumes.

Photo courtesy U. S. Dept of Labor



NEW TWIN FILTER RESPIRATOR

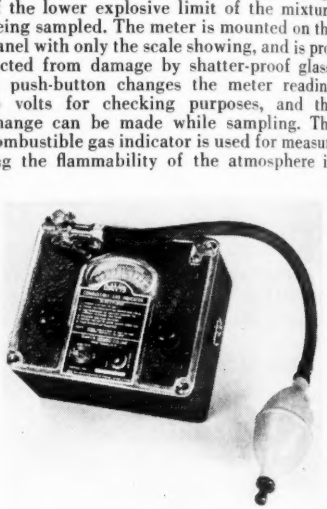
A NEW type low-resistance twin filter respirator for protection against both Type A (Pneumoniconiosis producing or nuisance dusts) and lead dusts is announced by Willson Products, Inc. This respirator employs a small rubber, form-fitting face piece so designed to permit the wearing of goggles or spectacles without visual interference. Two Rotiform Filters, each with 30 sq. in. filtering surface, are used to minimize breathing resistance. The respirator carries the Bureau of Mines approval under Schedule 21.

NEW COMBUSTIBLE GAS INDICATOR

A new combustible gas indicator for measuring directly the combustibility and explodibility of gas-air mixtures has been developed by the Davis Emergency Equipment Co., Inc. The indicator has been designed for lightness, compactness and economy without sacrificing accuracy of measurements. Weight of indicator, complete with batteries, is 6 pounds; dimensions of instrument panel are 6⅜" x 5⅜"; depth of case is 3¾". Current is supplied by six No. 2 flashlight cells.

The resistance of the platinum filaments used in both the active and comparison cells is controlled within very close limits, which insures accuracy comparable to that in larger instruments, according to the manufacturer. The two filaments are interchangeable, increasing maintenance convenience.

A 3-inch meter shows directly the percentage of the lower explosive limit of the mixture being sampled. The meter is mounted on the panel with only the scale showing, and is protected from damage by shatter-proof glass. A push-button changes the meter reading to volts for checking purposes, and the change can be made while sampling. The combustible gas indicator is used for measuring the flammability of the atmosphere in



tanks and other containers of flammable liquids and gases where flammable gas mixtures may be found. The test can be made in a few seconds.

Additional information and descriptive literature on any of the products mentioned in this service department may be obtained by writing Dept. N, OCCUPATIONAL HAZARDS & SAFETY, 812 Huron Road, Cleveland, Ohio.

IN THE FIELD

SPEEDFRAME GOGGLES

Mine Safety Appliances Co. announces a new type goggle assembly known as the Speedframe. The unit consists of suitable goggles mounted in a lightweight, comfortable fiber headframe, so designed that a simple nod of the head positions the goggles in front of the eyes, or a nod will throw them up and out of the way. The goggles

remain in either position without further adjustment, to give free use of both hands. The assembly is fully adjustable, and holds the goggles, when lowered, properly and comfortably in place.

Statements made in connection with any product mentioned in this service department are based on manufacturers' claims. Although these claims are believed to be true, this magazine does not guarantee that to be the case.

SAFETY SIPHON

Announcement has been made by the Pulmosan Safety Equipment Corp. of their distribution of the T.P.C. Safety Siphon for discharging the contents of carboys, drums and barrels. The Siphon consists of a special acid-resistant tube, to which is attached a priming bulb, visual priming chamber, special composition flexible hose and a flow control valve. Once the siphon is inserted, the flow valve is closed and the priming bulb flexed until liquid shows in the chamber. By adjusting the control valve, a regulated flow of liquid may be delivered and the flow is automatic.

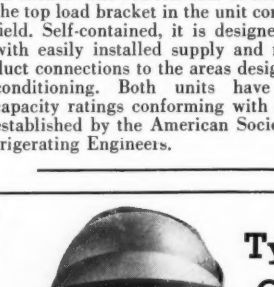
The siphon is designed to minimize the dangers of fumes, burns, spilling and splashing and discharges completely without tilting. Available for all types of acids and containers.

FLOOR MATS

Rubber floor mats, constructed by weaving strips from automobile tires onto a specially constructed galvanized steel spring and placing spacers or round wads made from rubber and fabric between the strips, are announced by the Cincinnati Mat Co. The mats may be used on hard-surfaced floors for employee comfort and to reduce the hazard of slipping. Mats may be cleaned easily, rolled when not in use, are reversible and lie flat to the floor surface.

AIR CONDITIONING UNITS

The Delco-Frigidaire Conditioning Division of General Motors announces two new self-contained air conditioning units, with five and ten-ton refrigeration capacity. The five-ton unit embodies a new feature in exact air distribution by "individual vane control" of the air outlet grilles. It is self-contained, portable and occupies a floor space of 44 x 22 inches. The ten-ton unit is designed for the top load bracket in the unit conditioning field. Self-contained, it is designed for use with easily installed supply and return air duct connections to the areas designated for conditioning. Both units have certified capacity ratings conforming with standards established by the American Society of Refrigerating Engineers.



There are thirteen other types.

JACKSON Eyeshields

Here's a light, well ventilated eyeshield that has many industrial uses. The transparent Cellulose Acetate visor has full metal binding, is adjustable at any angle and is non-fogging. Unaffected by sparks. Hot metal particles will not adhere. It gives vision without distortion. The Fiber visor guard deflects sparks—the fiber head guard, comfortably lined with fireproofed duck, provides additional protection. Available in clear, smoked, amber and light green.

Send *today* for illustrated folder.

JACKSON ELECTRODE HOLDER CO.
15122 Mack Ave. Dept. O-1 Detroit, Mich.

ANTI-FOGGING CLOTH

Designed to clean, polish and retard fogging, a Foggle Cloth has been anonunced by Industrial Products Co. The cloth is to prevent lenses from banking with condensation. According to the manufacturer this is accomplished by a non-toxic wetting out agent which reduces the surface tension of the glass. In use, both sides of the glass surfaced are wiped with the cloth.

Ohio Show Sets Attendance Record

ACCORDING to an announcement of Joseph P. Kearns, Superintendent, Ohio Division of Safety and Hygiene, the registered attendance at the Tenth All-Ohio Safety Congress was the largest in the history of the Congress. The consensus of opinion of delegates was that this year's show "was the best in the history of the movement for arousing interest and enthusiasm in accident prevention work," according to Mr. Kearns. The general meetings and the sectional sessions were all exceptionally well attended and the exhibitors expressed favorable reaction on the interest of delegates in the equipment displayed.

Orders Issued and Compliances Reported in New York Factories

ACCORDING to the Division of Factory Inspection, New York Department of Labor, for the year ending December 31, 1938, the following orders were issued and compliances reported to the division from factories in New York State: Waterclosets —12,361 orders, 11,109 compliances; Washrooms and sinks—2,060 orders, 1,682 compliances; Cleanliness or repair of workrooms, etc.—3,119 orders, 2,950 compliances; Removal of Dusts, Fumes, etc.—2,680 orders, 1,794 compliances; Lighting (eyesight protection)—2,692 orders, 2,530 compliances.

These figures indicate a willingness on the part of plants to follow the recommendations of the Division and to install equipment.

PROTECTIVE CLOTHING *in the Prevention of Dermatitis*

By G. C. Harrold, Ph.D.
Chief Chemist, Industrial Hygiene Division, Chrysler Corporation

DUE to the nature of industrial processes, it is sometimes difficult to correct a situation by means of engineering installations or substitution of less irritant products.

In such cases, it becomes necessary to provide protection for the individual. Such protection varies from the use of protective clothing and protective creams to the use of proper cleansing agents and selection of personnel resistant to the exposure involved.

Since much material has been written about protective clothing, and safety equipment houses have voluminous descriptive material available, a summary will be given of the general situation with some emphasis on use of materials which will give greater satisfaction or longer life at decreased cost.

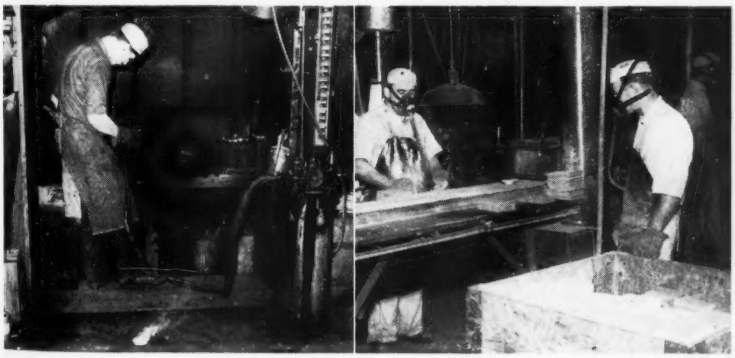
Protective Clothing

The need for protection may vary from the complete asbestos suit, gloves, hood, and shoes used when excessive exposures to heat take place, to a rubber glove covering only the index finger of one hand. In those cases needing complete protection such as cleaning out corrosive acid tanks, etc., we can use an outfit made completely from rubber or rubber-like materials. In such cases, this protection sometimes has to be sup-

Workmen in paint spray booth wearing gloves and apron. Note sprinkler heads, vapor proof lamp and distribution plates.

Workmen in storage battery plant wearing gloves, aprons, and air line respirators. Note local exhaust.

Photos courtesy U. S. Dept. of Labor



plemented with chemical cartridges to avoid breathing of irritant acids

In the past, this problem has been met by using rubber coated cloth. This material has proved satisfactory in many situations. However, in many cases when chemicals, and always when oily products either alone or with chemicals, are present, we find that the deterioration of the rubber coated material is so rapid as to make the expenditure very high. The recent commercial fabrications of cloth impregnated or coated with the new rubber-like materials have proved to be much more satisfactory from the life standpoint. In most cases, the effective life of such material is so much greater than rubber coated articles that the higher initial cost of the protective clothing is cancelled and substantial savings have resulted. Actual service checks have shown the effective life of some synthetic materials to be from four to more than ten times the life of the rubber coated articles.

While the above applies particularly to the chemical and oil industries, uses are found in practically every branch of manufacturing where acids or other chemicals are present with oils or oily products.

By "rubber-like" materials is meant the synthetic materials having characteristics like rubber in greater or lesser degree. These are commonly called synthetic rubbers. Of the commercially available materials, "Neoprene" most closely resembles rubber in chemical structure. It is more highly resistant to oil and hydrocarbons than rubber.

Other synthetic materials available are "Thiokol," plasticized polyvinyl resins as "Koroseal," and plasticized glyptal resins.

Each of the above, as well as other materials, will do better on some one particular job. In general, however, they are all more resistant to chemicals than rubber. "Thiokol" and "Neoprene" in particular are resistant to oils. "Thiokol" should not be used in alkalis as the life is short in contact with such solutions. Plasticized polyvinyl resins as "Koroseal" are little affected by strong oxidizing acids such as chromic acid, while most of the other synthetics are not suitable for protective clothing used in contact with such solutions. In general, the manufacturers of synthetic materials can give good advice as to where their particular products will be most effective.

Synthetic Materials and Other Products

The time spent on rubber and rubber-like protective materials is due to the finding that often porous cloth or leather materials are used which act as pads to hold liquids in contact with the skin. Also, in some cases, porous materials permit irritant dust to come in contact with the skin. Even metallic dust which is chemically non-irritant will cause physical irritation if allowed to penetrate the protective clothing. In this case, the protection then becomes a rubbing pad and a detriment rather than an aid.

Other types of new materials proving to have merit are the rubber hydrochlorides such as "Pliofilm." While this material allows increased visibility and is very light, which is advantageous in most protective clothing, it should be noted that the material has to be bound so as to eliminate tearing since it will rip easily once a tear is started. A common complaint with all the materials

mentioned is that excessive perspiring takes place unless proper "breather" openings are inserted so that the skin area being protected is not completely closed.

Gloves

Since the majority of industrial methods do not require complete protection, it might be well to consider the various items of protective equipment separately. Probably gloves are used more than any other single item. In certain wet operations involving irritant solvents, the worker is protected by short or long gloves. In such cases where objects are lifted to or above the worker's shoulder, the liquid tends to run on to the unprotected forearm or shoulder as the case may be. This is readily taken care of by using a glove made with a turned up cuff. This cuff effectively prevents the liquid from getting on the skin of the worker. Another recent innovation is the rubber glove called "Griptite" made with a special cross ribbed construction to prevent slipping. At the present time, this type glove is not available in synthetic materials, due to manufacturing difficulties. In many operations having high cutting or abrasion possibilities, the above-mentioned material is not as effective as other coverings.

Among the more commonly used materials, we have leather and canvas Consideration of this type glove should be governed by the kinds of operation. As mentioned previously, wet processes with gloves of this type will provide a high grade "patch test" with the result that irritant chemicals will cause dermatitis. The difficulty is sometimes eliminated by first heavily coating the hands with lanolin-petrolatum mixtures or protective creams. After a few applications, the inside of the gloves will be fairly well solvent-proofed.

In those operations where leather gloves are found useful, it has been found that certain coarse yellow gloves, presumably chrome tanned, are productive of trouble. Chemical examination shows that small amounts of irritant chrome compounds are present. Even perspiration from the hands provides enough moisture to cause chrome ulcers in some cases.

Leather gloves in particular should be checked to see that the inside of the glove does not have heavy upraised seams or rough edges. The continual movement or raised surfaces against the skin will provide irritation and possible breaking of the skin which leads to the possibility of infections as well as callouses, blisters, etc.

Arm bands or shoulder length sleeve protectors are often added to glove protection. This part of the protective clothing may be in two overlapping sections. The upper part usually will not have to stand as much abrasive action as the glove or forearm and hence may be of lighter and cheaper material. In cases where such combinations are used, either tightly fitted wristlets on the glove, or the glove with turned up cuffs, are needed particularly where liquids are being guarded against. In some cases, a heavy inserted section of leather or cloth, often called "glove savers," over a rubber or rubber impregnated article will provide protection from the abrasive actions of the operations and from the irritant substances.

[*To be continued in July*]

Right off the Docket

The trend of litigation on workmen's health and accident compensation is reflected in these briefs of the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist.

Hernia Causing Death By Aggravation of Stomach Ulcer Condition

THE worker sustained an injury resulting in a hernia. He underwent an operation for the hernia, and received compensation for the disability caused by it. He previously had been suffering from stomach trouble. Sometime after the hernia operation, the worker returned to his employment, but he had difficulty working, and kept losing weight. About a year after the hernia operation, another operation was performed and it was discovered that an ulcer had perforated the stomach. Five days later the employee died.

The court held that the loss of weight and the worry following the hernia operation, lowered the employee's vitality, and accelerated the stomach ulcer condition, and consequently the accidental hernia injury was a contributing cause of the employee's death. An award to the employee was affirmed.

Rickard v. Bridgeman-Russell Co. et al. (Michigan) 284 N.W., 689, (March, 1939)

Award for Death From Pneumonia

On March 17th, 18th, and 19th, 1936, a large portion of the City of Pittsburgh was inundated by an extraordinary flood. The water rose ten feet above the level of the first floor of the plant in which the husband of the claimant in this case, was employed as a machinist. When the waters receded an accumulation of mud and debris was left, covering the machines and the floor. Claimant's husband, together with other plant employees, worked for 8½ days cleaning out the premises. Each night he returned home dirty, muddy and wet, with his trousers and shoes soggy. He developed pneumonia and died.

A verdict was rendered for the company in the lower court on the ground that the death was the result of natural causes, and that no accident had been suffered in the course of employment. In reversing the verdict and ordering an award, the Superior Court of Pennsylvania held: "That the deceased was employed as a machinist, not a janitor or a member of a crew brought in to clean up conditions left by the flood. The work he was doing when the pneumonia developed was foreign to his usual course of employment, unusual and extraordinary, and not anticipated by either employee or employer. His death was compensable under the Workmen's Compensation Act as being the result of "accident in the course of his employment."

Parks v. Miller Printing Machine Co., (Pennsylvania) 4 Atlantic (2nd) 831, (Dec. 1938)

Disobedience of Employer's Orders Does Not Bar Recovery

The employee was clearing rubbish from the seventh floor of a building under construction. He loaded the rubbish on a wheelbarrow which was then put on a material hoist and lowered to the ground. Despite specific orders to the contrary, the employee, instead of using the stairway,

Digested and compiled by
HILTON E. ROBERTS
Member Ohio and New York Bars

rode the hoist to the ground. The cable slipped, the hoist struck the ground with considerable force, and the injury to the employee resulted.

The Supreme Court affirmed an award holding that an employee who receives an injury while engaged in doing work he is employed to do, during the course of which he violates rules of his employer dealing with the method or manner of performing work, will, notwithstanding such violation, be deemed to have been injured in the course of employment.

Laudato v. Hunkin-Conkey Const. Co., (Ohio), 19 N. E., (2nd), 898, (March 1939)

Injury Resulting From Scratching

The petitioner's work required her to use kerosene as a cleaning agent in which she dipped clips prior to stringing them. Her fingers and hands were wet and dirty during this process. While at work her ear itched, and in response to the itching sensation she scratched it. Infection set in, an operation became necessary, disability resulted.

The Court in making an award stated, "It is reasonable to expect that persons in the normal activity of their daily life would attempt to relieve the numerous irritations the body is subject to. If in such act the skin is broken by scratching, thereby permitting germs to enter and infections to develop, such resultant condition is compensable."

Schalkoff v. Clemco, Inc., et al. (New Jersey) 5 Atlantic (2nd) 62, (March, 1939)

The Cost of Eye Injuries

In the State of Pennsylvania, one industrial injury in every five is an injury to the eye. In the United States in 1938, it has been estimated that there were 300,000 industrial eye accidents with a lost time interval of 3,600,000 days and $18,000,000 lost in wages. The direct cost per year to industry exceeds $50,000,000. From an economic standpoint alone, these figures demand that increased safety precautions be provided.

Westinghouse "Safety News"

Safety Equipment Education Gets Results

AN interesting and valuable safety education program is carried on by the Atlantic Refining Co., at its Philadelphia refinery. A one-hour program, combining lectures and practical demonstrations, has been instituted in which every employee will be given the opportunity to actually handle safety equipment and to learn the purpose for which it is intended. The program is centered about an exhibit of safety equipment available to employees, and containing more than 150 different items.

During the past several years the Atlantic's general safety program has greatly reduced the number and severity of injuries suffered by employees.

"THE ACCEPTED STANDARD OF MERIT"

PLY FOR PREVENTION OF INDUSTRIAL SKIN DISEASES

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MILBURN CO., DETROIT, MICH.

DISTRIBUTORS IN ALL PRINCIPAL INDUSTRIAL AREAS

This month in *Washington*

By W. T. CAMERON
Chief Safety Adviser, Division of Labor Standards, U. S. Department of Labor

Add to the sure harbingers of spring the no-less than 28 regional, state and city safety conferences now competing with housecleaning, circuses and other signs of the season. Having had the privilege of attending quite a few of these revival meetings within the past 6 or 8 weeks, I can tell you something of, what I think, are new and healthy indications. Better attended, yes; better planned, definitely; higher caliber of speakers, without question. But something more than that. I think it can be summed up by saying that the safety idea as a fundamental philosophy of good management has "arrived."

Time was when our annual meetings were about 90 per cent inspiration and 10 per cent instruction. We just had to get together once or twice a year to tell each other how good we were, how much improved was our plant safety record, and to reaffirm our faith in safety by swapping tales with other fellows just as nutty on the subject as we were. Nobody back home seemed to care about the accidents that *didn't* happen—all we heard about were the accidents we didn't prevent. So we traced for each other's benefit the downward trend of accidents and spent a lot of time keeping each other sold on what we already knew was logical and reasonable. We used to talk a lot about "why" accidents should be prevented but not much about "how" they could be prevented.

Do you remember those meetings when almost every speaker spent the first 20 of his allotted 30 minutes tracing the history of the safety movement since its beginning, and even when he had finished not leaving with you one idea that you could take back and put into practice in your plant? Remember the emotional relapse that used to follow these meetings when you got back to the plant and realized that although a lot was said, there was hardly a single idea that you could put into actual operation to make your own outfit a safer place.

The big change has come about, I think, through the inclusion of many practical shop men on our safety conference programs talking not in generalities about "why" we should control dusty operations, but telling specifically the size and shape of exhaust hood, the velocity of air flow, the type of dust arrester, and the ultimate disposal of the accumulated dust. Look over any safety program today and see the number of superintendents and engineers on the mechanical phases, psychologists and educators on the human side of safety, and State administrators on the regulatory and enforcement part of the problem.

Safety and safety men need a spring tonic. The meetings being held all over the country today not only provide psychological rejuvenation to men who must carry on the work for 365 days, but actually provide some "sulphur and molasses" which can be taken back to revitalize the movement in the home town plant.

A New Yardstick Needed

Safety is the only business I know of where accomplishment is measured by mistakes. We talk about the success of a safety campaign in terms of accidents that didn't get prevented as compared with the number which didn't get prevented last year—or in the last 10 years.

When you describe in glowing terms a leader in the community you don't tell about the fewer number of social errors he makes now compared with 20 years ago. Monetary success is measured by the dollars and cents profit a company shows, not by spotlighting today's losses compared with losses 10 years ago.

Yet in this business of saving lives and protecting the health of workers, we state with great pride, "We only killed 1 man, we only lost 1 leg, lost only 8 fingers and 3 eyes last year. We're really getting good! This is a 14 per cent reduction over last year and if we can make a similar reduction this year, we will only kill —," and so on.

Positive Table of Probable Accidents

Based on our charts and curves we can *say*, "Two men who are alive today in our plant would have died had it not been for our efforts; 3 men didn't lose any fingers; 56 men didn't cut and bruise themselves"—but the trouble is, and this is my point, we can't *prove* it. Maybe they wouldn't have gotten killed or hurt anyway!

Perhaps in this business of safety we need to work out a table of probabilities for every industry just as contractors used to figure on one death for every million dollars of contracts; or in building construction, one death per floor; or the old-time mine operator, figuring one dead man for every 50 thousand tons of coal produced. At any rate, I would like to see worked out a more positive approach and perhaps a change in nomenclature similar to that of the insurance companies many years ago when they found they could write a great many more policies when they talked about "life" insurance instead of "death" insurance.

Of course, the ultimate and the dream of every safety man is to someday work himself out of a job because people no longer make those mistakes we call accidents.

"pull" the fresh air across the room for discharge. The fans should, if possible, be placed so that the air will be removed from whatever part of the building has the most objectionable concentration of bad air. The contaminated air should be removed as near the source as possible, and the path of the fresh or incoming air should be such as to sweep the room and produce a regular and steady flow toward the fan. Care should be taken to see that the exhaust fan is not so located that it must discharge against the prevailing wind.

The number and size of fans installed should be determined by the size of the workroom, and the number of times per hour it is desired to have the air completely changed. For example, if the workroom is 100′ x 50′ x 20′, and the air was to be changed four times an hour, the total capacity of the exhaust fans should be approximately 6500 cubic feet per minute. Thus in fifteen minutes the fans would discharge an amount of air equal to the total cubic contents of the room.

Supplying Fresh Air

Fans and blowers are oftentimes used for blowing fresh air into buildings. However, there are limitations and objections to this method of supplying fresh air; for example, the creation of drafts and the introduction of dusts and odors from the outside. Air drawn into a room will cause more objectionable drafts than the same volume of air taken out by exhaust fans. It may be possible to utilize this method to augment the natural fresh air supply by locating the blowers where they will not cause drafts but supply the fresh air indirectly into the workroom. Blower fans are sometimes installed at a remote point to blow fresh air into one or more rooms through ducts. Such installations should be made only by competent engineers to make certain that the system of ducts will not create such a resistance that the fans will become overloaded.

With the use of the plenum system of ventilation, where air is driven into the workroom, it is possible to wash, humidify, or cool the air before it is discharged into the atmosphere. Various types of air filters are obtainable and can be used advantageously to change the quality of air distributed.

Air Conditioning

While it is not the purpose of this article to go into air conditioning, any discussion of industrial ventilation today must at least make mention of this method. Air conditioning really goes beyond mere ventilation —it includes air supply, humidification, dehumidification, cooling, circulation and even the supression of external noises. With the present-day trend in industrial construction and modernization, and in some types of industrial operations, air conditioning is of increasing significance and is used to advantage.

Questions and Answers

Individual answers are given to all questions on industrial health or accident matters. A few of the questions received from readers each month are published for their general interest.

Head Protection In Mines

What type of head protection would you recommend for use by miners working in mine drifts where there are overhead trolley lines?—*T. S. R., Scranton, Pa.*

For workers in mine drifts and other locations where there is the danger of contact with overhead trolley lines, the safety helmet must provide protection against electrical shock and possible injury or death. The material used in the protector should be of non-conducting material and capable of meeting tests for dialectric strength. Such type head protectors are available today.

Washroom Sanitation Against Foot Infections

Although we mop and disinfect our washroom daily, recently there have been a great number of complaints against "itchings" of the feet and other foot irritations. Could you suggest to us any other measures we might take to prevent this situation?—*A. W., Dallas, Texas*

Additional measures which might be taken are the use of foot baths containing a disinfecting solution of 1% to 5% sodium hypochlorite. These should be placed convenient to the showers so that the man may step into them on leaving the showers. The solution should be changed daily. Another measure used by many companies is to provide inexpensive paper sandals which the workmen wear in the locker and washrooms. These are then discarded after use. Another measure suggested is the use of "runner" mats in front of lockers. These mats should be disinfected daily.

Castor Oil Meal Dust

In our stevedoring operations we handle some domestic and foreign Castor Oil Meal. Recently, while unloading a ship containing some bagged foreign Castor Meal, several employees complained of an irritation of the eyes due to the meal dust. We had a portion of this meal analyzed and it was found to be free of alkali and is of the same slight acidity as cottonseed meal, or any other organic materials. We are unable to understand why dust produced from this meal would cause irritation to the employee's eyes, as we have not been confronted with this condition in handling other shipments.

We wonder if you have any data on this kind of meal and can advise us what could be causing the eye irritations, and also what preventive measures could be used.—*L. R. R., Savannah, Ga.*

There is not a great deal of information available concerning Castor Meal and the cause of any irritating effects it may have on the skin and eyes. However, in this case there are probably two factors involved in the production of the irritation in the eyes of your employees. One is the direct foreign body irritating action of the meal. Any dust particles entering the eye may cause this type of irritation. The second factor is probably the slight acidity of the meal. The normal tears are definitely alkaline. Well-fitted goggles of the eyecup type are recommended as a preventive measure. This type goggle is available commercially and it is suggested that each worker involved in this operation should be provided with a pair.

It is important that these goggles be kept clean and sterilized regularly to prevent irritation.

DRINKING WATER

[*Continued from page 12*]

ers. They feel that they have done their duty if this one is installed any place in the plant. Yet, if they would consider carefully, they would realize the importance of providing the correct number of sources in proportion to the number of employees. A survey in one plant of approximately 500 employees and only one cooler revealed the startling (to the management) fact that each employee needed an average of two minutes to go from his job to the cooler, get his drink and return. Each employee averaged eight trips a day. This meant that more than 133 hours per day were being spent by the employees in getting a drink of water. With this fact before it, management lost no time in installing three additional coolers at proper locations in the plant. The result was to reduce the time needed to an average of less than one minute per employee for each trip. Such savings can be counted in terms of dollars and cents.

Install the equipment in a location which will be the most convenient for the greatest number of workers. Engineering developments in the manufacture of water coolers have overcome the problem of locating the drinking water supply where it would not be affected by terrific heats given off by certain machinery and in some operations. Men at these operations naturally desire greater quantities of water because they lose more by perspiration. With modern coolers, the drinking water supply can be located close enough for these workers to satisfy their thirst without losing too much time from their work. Thus, they are encouraged to drink sufficient quantities of water which they might not do if the supply had to be placed at the other end of the building.

Temperature Range

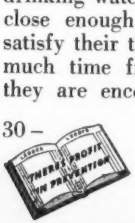
It is only natural to believe that the colder the water is the better it will quench thirst. Yet, one of the hazards to be guarded against is getting the water below a healthful temperature. Employees who are working under extreme heat conditions desire very cold water. But the recommended temperature for the plant drinking water supply is between 50°. 55° F. If this temperature is maintained no difficulty should be encountered in encouraging the drinking of enough water at the right temperature.

Sanitary Equipment

The upturned spigot and the common drinking cup have no place in modern industry. If the city water supply is not available to the plant, wells or other sources should be used. But the water should be tested regularly for purity.

If the water tastes bad or the facilities are unclean and inadequate, the workmen are inclined to drink only small amounts of water and at infrequent intervals. In such cases comfort and health suffer. Sanitary fountains, with angled jets, guarded so the mouth does not come into contact with the jet, and water coolers and paper cups are recommended as the most sanitary and healthful drinking water equipment.

Industrial management will profit by installing such modern equipment for experience has shown that healthful and properly cooled water helps relieve fatigue, thus improving mental and physical efficiency.



Idaho Now Compensates For Occupational Diseases

AN AMENDMENT to the Idaho Workmen's Compensation Law, recently signed by the Governor, makes compensable disability or death arising from occupational diseases. The new law defines 11 occupational diseases which are made compensable and sets forth the occupations in which the diseases must be contracted to be subject to the law. The schedule includes lead poisoning; carbon monoxide poisoning; methanol, carbon bisulphide, hydrocarbon distillates poisoning; benzol poisoning; glanders; radium poisoning; poisoning by chromic acid, bichromate of ammonium, potassium or sodium; ulceration due to tar, pitch, etc.; dermatitis; anthrax; and silicosis. Special provisions relating to silicosis are included.

Provision is made which gives the industrial accident board right to require employers to adopt approved rules for the protection and safety of employees, and to install, use or adopt such protective or safety appliances which the board deems necessary for protection of employees. Provision is made for a three man medical panel to handle medical questions in claims involving diseases other than dermatitis; and a six man panel for silicosis claims. The law also creates a state Bureau of Industrial Hygiene.

Details concerning the Idaho Law may be had by writing to OCCUPATIONAL HAZARDS & SAFETY.

Industrial Sanitation Exhibit At New York Fair

AN INVITATION has been extended to New York World's Fair visitors to visit the industrial sanitation display of the West Disinfecting Co. in the Medical and Public Health Bldg. Photographs and models are used in the exhibit to demonstrate the importance of plant sanitation in maintaining the health and efficiency of workmen. Contrasting displays, showing good and bad conditions are used to emphasize this factor.

Accident Prevention In The Service Shop

IT IS now generally agreed that any improvements which will help to avoid accidents to employees, relieve eye strain, provide better air to breathe, etc., are very much worthwhile and do actually pay dividends. The protection of eyes is a very important consideration. Goggles or spectacles are furnished to each man who has a need for them. The newer type shields which cover the entire face are being tried in several shops and appear to be quite satisfactory. . . . A determined effort is being made to sell our Service Department on the value of using safety shoes. We find that this is not so difficult once all the facts are presented to the employee. There is a tendency on the part of the average employee to wear dress shoes, which are no longer suitable for dress, as a work shoe in the service department. This type of worn dress shoe gives very little support to the employee's feet. Some of our employees admit that they do not suffer nearly as much from foot fatigue when well-built safety shoes are worn. Some shops make the wearing of safety shoes a requirement of employment.

Westinghouse, "SAFETY NEWS"

New Air Hygiene Foundation Bulletin

ROUTLINE Sampling for Control of Atmospheric Impurities" is the subject of a new bulletin released by the Air Hygiene Foundation. The bulletin was prepared by the Foundation's Preventive Engineering Committee, and lists proved methods of collection, determination and apparatus for checking 45 dangerous substances commonly found in industrial atmospheres. The report explains that two steps are involved in checking the air of workplaces; "first, measurement of air currents, and second, estimation of impurities." The resulting data is valuable in that it can be applied to the design of control equipment or to checking the results brought about by the use of such equipment.

[Continued from page 14]

at least $25.00 every day that you allow the present equipment to stand the way it is."

"Twenty-five dollars a day? Why, that doesn't sound possible. How do you figure that? Why that is almost 20 cents per day per employee."

"That's right, Mr. Vice-President, twenty cents per day per workman. It amounts to a pretty tidy sum of money."

"I never thought of that."

"Let me ask you a direct question, Mr. Vice-President. Have you been in your plant washroom recently?"

"No, I can't say that I have. Why do you ask that?"

"Well, I'm going to be brutally frank with you. I believe that if you had been you would have done something about conditions there. Your company is progressive and far-sighted in your methods and it doesn't seem consistent that in the matter of plant sanitation you would tolerate what I saw. There was soggy toilet paper, used in lieu of towels, scattered over the floor; grimy cakes of soap on the window sills and other convenient but unsanitary places; clothes hanging on nails; three-ring washbowls and other similar sights. I'm certain that *you* wouldn't bathe and change clothes under such conditions and I believe that if you really thought about it you wouldn't ask your employees to do it.

"There might be something in what you say, Mr. Inspector. I haven't had time, and I suppose must admit that I haven't taken the trouble, to look into it as closely as I should have. What are your recommendations for changing things the way they should be?"

"My report includes specific recommendations and a layout of a suggested washroom that will meet your requirements."

"Right off, I'd say that you have done a good job. But it looks like a fairly heavy outlay of money will be needed. How much do you figure it will cost?"

"Roughly. I'd say a maximum of $4500."

"The way business is that seems like a large expense."

"Well, look at it this way. You should save approximately $25.00 per day with these changes. Thus, it becomes an investment that will more than pay for itself in less than a year's time."

"Do you mean to say that the installation will more than pay for itself in less than a year?"

"That's right. It's simply a question of arithmetic. Certainly your company couldn't find a more profitable investment."

Equipment

"How do we go about getting this type of equipment you recommend Mr. Inspector?"

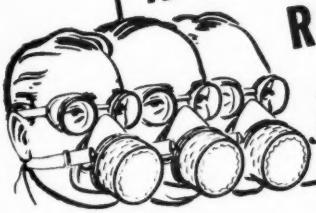
I have lists here of the manufacturers of the various products. Here is one on paper towels, washfountains, showers, soaps, lockers, toilets, urinals, and the rest. Take this list and you can get estimates from the manufacturers."

"You certainly go into things thoroughly, Mr. Inspector."

"Well, that's our business. After all, the better your equipment is, the less the risk of any occupational diseases in your plant and the better it is for us."

AMERICAN R1000 RESPIRATOR *fits any face*

Pats. Pending



Face-mask of pliable, non-irritating rubber is designed to fit any face *comfortably.* Cantilevered face-contacting edges of the mask provide a *double* airtight seal. Adjustable one-piece headband (*or new double headband*) holds the mask snugly, but not too tightly, against face. Day-long comfort and safety are assured.

The American R1000 Respirator also features the special long-lived, clog-resistant filter cartridge . . . the inhalation valve and twin exhalation valves that make breathing safe and easy. Plus new compactness, light weight, and unobstructed visibility with or without goggles. *Write for Bulletin TL 119.*

APPROVED FOR TYPE A DUSTS BY U. S. BUREAU OF MINES

AMERICAN OPTICAL COMPANY

Manufacturers, for more than 100 years, of products to aid and protect vision. Factories at Southbridge, Mass. In Canada, Consolidated Optical Co., Ltd. Branch offices in all principal industrial centers

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IN THE PLANT... IN THE FIELD

here's your Best Bet for **HOT WEATHER HEALTH** *and* **COMFORT**

M.S.A SALT TABLETS

M.S.A SALT TABLET DISPENSERS

Sweating men need *salt*—the proper aid in the prevention* of heat sickness! That fact has moved out of the laboratory into established industrial usage. Men are more alert—and thus work more carefully—if salt lost from the body is periodically replaced by taking salt tablets.

And with the growth of salt tablet therapy, M.S.A. is today the outstanding leader in the manufacture of attractive, easy-to-use salt tablet dispensing units for industrial workers everywhere.

M.S.A. Salt Tablets are pure, quick-dissolving and effective, and are furnished either in 10-grain sodium chloride or combination sodium chloride and dextrose units, as specified.

M.S.A. Salt Tablet Dispensers in three different styles provide a complete range of service—for large groups of workers, smaller crews, and individuals at a distance from central sources of supply. The flat, compact metal One-at-a-Time Dispenser takes but little space in a workman's pocket, is convenient, sanitary, time-saving in use—a slide of the lid automatically dispenses a single tablet, without fumbling or spilling the reserve supply. M.S.A. Bakelite Salt Tablet Dispensers provide positive, one-hand operation—one tablet every time! They are sealed against entry of dust, dirt or moisture, and are equally adapted to indoor or outdoor use—may be installed anywhere.

Write for complete details—and let us arrange to show you these inexpensive, efficient M.S.A. aids to "production as usual" in hot working conditions!

*Medical science has demonstrated that the body loses approximately 20 grains of salt with every pint of sweat. Hot jobs may cause the worker to perspire several pints per hour. M.S.A 10-grain sodium chloride tablets, taken with water at proper intervals, replenish the system's salt supply, and so aid in the prevention of cramps, exhaustion and other disturbances resulting from excessive loss of body salt.

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